

# Zinc-Plated Penny



*How to electroplate zinc onto copper using household ingredients.*

## **Ingredients:**

- 1 Piece of zinc. An easy source of zinc is the shell of a carbon-zinc battery (do not use an alkaline or rechargeable battery). An adult should cut up the shell, remove the black glop, and clean the zinc (wear plastic gloves). You can also sand off the thin layer of copper on a penny (1982 or newer) to reveal a zinc core.
- 1 Penny, preferably a shiny one or you can remove the tarnish by soaking in vinegar mixed with some table salt.
- 250 ml Vinegar (about 1 cup)
- 25 g Epsom Salt (5 tsp)
- 30 g Sugar (6 tsp)
- 1 Glass bowl
- 1 glob Toothpaste and a toothbrush
- 1 "D" size battery (1.5 V)
- 2 Wires to make the electrical connection
- 2 Plastic gloves

## **Directions:**

1. Pour the vinegar into the glass bowl. Put the zinc into the vinegar and let it sit for several hours to dissolve some of the zinc.
2. Add the epsom salt and sugar. Stir well to dissolve.
3. Use the toothpaste and brush to polish the penny until it's shiny and then rinse well with water. Wear plastic gloves so you do not get fingerprints or other soils on the penny after cleaning.
4. Connect the positive terminal of the battery to the zinc and the negative terminal to the penny using the wires and place them into the vinegar solution. Do not let them touch!
5. Within a few minutes, you should get a silvery coating on the penny.

Tip: If your coating is dull grey instead of silver, make sure you cleaned the penny really well. You can also try using the toothbrush and toothpaste to polish it.

TRY THIS! Turn your "silver" penny "gold." Place it in a 350 oF oven for about 15 minutes. The zinc mixes or "alloys" with the copper and forms brass.